



Australian Government

Department of Education, Employment and Workplace Relations

MEM26013A Select and use composite processes or systems appropriate for product

Release: 1

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Modification History

Release 1 New unit

Unit Descriptor

This unit of competency covers the skills and knowledge required to select the one most appropriate process for a job from all common composite processes.

Application of the Unit

This unit covers the selection of processes or systems for the redesign of an existing product (e.g. using a different process) or the design of a new product similar to an existing product. This unit does not include the selection of suitable materials. Where materials also need to be chosen refer to MEM26011A Determine materials and techniques for a composite component or product.

Process/system selection may typically be undertaken by an individual in liaison with relevant stakeholders or it may undertaken by a team. Selection may be undertaken in an office environment or at the worksite.

Use of the process/system will be part of a fabrication and may be undertaken by an individual or a team. It may be undertaken in a workshop or factory environment or in the field and may be used to manufacture new products, prototypes and samples, or to make repairs.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

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|---|------------------------------------------|------|---------------------------------------------------------------------------------------------|
| 1 | Identify process requirements of product | 1.1 | Determine physical characteristics of product |
| | | 1.2 | Determine chemical characteristics of product |
| | | 1.3 | Determine aesthetic characteristics of product |
| | | 1.4 | Determine production volume and delivery schedule |
| | | 1.5 | Determine regulatory requirements |
| 2 | Select most appropriate process/system | 2.1 | Identify processes which can deliver requirements of product |
| | | 2.2 | Determine the capability of the organisation to meet the requirements and use the processes |
| | | 2.3 | Evaluate each process against the requirements |
| | | 2.4 | Select most appropriate process |
| | | 2.5 | Fabricate a sample using most appropriate process |
| | | 2.6 | Conduct/organise for relevant tests |
| | | 2.7 | Evaluate process evaluation test (PET) results |
| | | 2.8 | Review match of PET results with product and sustainability requirements |
| | | 2.9 | Review selected fabrication process |
| | | 2.10 | Make any required changes to process |

- 3 Use process to make product
 - 3.1 Identify and control hazards
 - 3.2 Fabricate product using selected process
 - 3.3 Minimise waste
 - 3.4 Review product compared to requirements
 - 3.5 Review fabrication process
 - 3.6 Identify areas for improvement and take corrective actions
 - 3.7 Complete any required documentation/reporting

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- communicating technical information
- making decisions
- identifying product characteristics
- using relevant equipment

Required knowledge

Required knowledge includes:

- cost analysis for each process to select best process
- technical standards/suitability
- mechanical stresses
- life cycle assessment for each process
- ease of manufacture
- testing criteria
- failure modes effects analysis (FMEA)
- typical applications of each major type of process, strengths and weaknesses
- grid analysis

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>It is essential that the process and equipment be understood and that the importance of critical material properties, settings and readings is known. Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. Consistent performance should be demonstrated. In</p>
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	<p>particular look to see that:</p> <ul style="list-style-type: none">• all reasonably available processes have been considered• an appropriate process has been selected• the reasons for choosing the process are sound• the product meets its required performance. <p>Competence must be demonstrated in the operation of all ancillary equipment to the level required for this unit of competency.</p>
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Context of and specific resources for assessment	Assessment will require the selection and use of appropriate composite processes or making the required products or components. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation.
Method of assessment	A single assessment event is not appropriate. On-the-job assessment should be included as part of the assessment process wherever possible. Where assessment occurs off the job, judgement must consider evidence of the candidate's performance in a productive work environment that includes a sufficient range of appropriate tasks and materials to cover the scope of application for this unit. Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways, including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: <ul style="list-style-type: none"> • all work instructions • standard operating procedures • formulas/recipes
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	<ul style="list-style-type: none">• batch sheets• temporary instructions• any similar instructions provided for the smooth running of the plant• good operating practice as may be defined by industry codes of practice (e.g. Responsible Care) and government regulations
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Sustainability	<p>Sustainability incorporates the three aspects of:</p> <ul style="list-style-type: none"> • survival of the ecology/physical environment – which means that an enterprise needs to manage the impact of the business to ensure the survival of the physical environment • economic viability – efficiency, cost and waste reduction and competitiveness to support survival of the business • social sustainability – an enterprise needs to manage the impact of the business to ensure its continued survival within the community and the survival of the community, including occupational health and safety (OHS)
Physical characteristics of product	<p>Physical characteristics of product include:</p> <ul style="list-style-type: none"> • size • shape • weight • requiring one/two part mould • light weight • high strength • erosion resistant
Chemical characteristics of product	<p>Chemical characteristics of product include:</p> <ul style="list-style-type: none"> • corrosion resistant • fire retardant • ultraviolet (UV) resistant
Aesthetic characteristics of product	<p>Aesthetic characteristics of product include:</p> <ul style="list-style-type: none"> • finish (e.g. gloss, buffed and matt) • colour
Regulatory requirements	<p>Regulatory requirements include:</p> <ul style="list-style-type: none"> • dangerous goods • OHS • environment protection agency (EPA)
Appropriate	<p>Appropriate includes:</p> <ul style="list-style-type: none"> • technical • practical • cost • sustainability criteria
Logs and reports	<p>Logs and reports may include:</p>

	<ul style="list-style-type: none"> • paper or electronic based • verbal reports • items found which require action
Appropriate action	<p>Appropriate action includes:</p> <ul style="list-style-type: none"> • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person
Typical problems	<p>Typical problems may include:</p> <ul style="list-style-type: none"> • cost/benefit of different processes • selecting a process suited to the customer needs • selecting a process within the organisation capability • maximising sustainability
Health, safety and environment (HSE)	<p>All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state/territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence</p>

Unit Sector(s)

Composites

Custom Content Section

Not applicable.